

AN 1985:624453 CAPLUS  
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 TI Photochromic plastic lenses  
 PA Suwa Seikosha Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM G03C001-733  
 ICS G02B001-10; G02C007-10  
 CC 74-9 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 60107030	A2	19850612	JP 1983-214907	19831115 <--
PRAI JP 1983-214907		19831115		

# CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 60107030	ICM	G03C001-733
	ICS	G02B001-10; G02C007-10
	IPCI	G03C0001-733 [ICM,4]; G02B0001-10 [ICS,4]; G02C0007-10 [ICS,4]

AB The title lenses have coated and cured layers containing (A) colloidal silica with a diameter of 1-100 nm, (B)  $\geq 1$  hydrolyzate or partial condensate of a Si compound having the general formula  $RaSiR1b(OR2)(4-a-b)$  (R = vinyl, NH2, imino, epoxy, methacryloyloxy, Ph, C1-6 hydrocarbon group having an SH or alkylthio group; R1 = H, C1-6 hydrocarbon group, C1-6 haloalkyl; R2 = C1-3 hydrocarbon group, C1-3 alkoxyalkyl, C1-4 acyl; a = 0-2; b = 0-2; a + b  $\leq$  2), (C) a polyfunctional epoxy compound, (D)  $\geq 1$  dithizone-Hg compound having the general formula  $(R3N:N)(R4NHN:)CSHgSC(N:NR5)(:NNHR6)$  or  $(R7N:N)(R8NHN:)CSHgR9$  [R3-R9 = Ph or naphthyl that may be totally or partially substituted by a halo, C1-6 hydrocarbon group, C1-6 haloalkyl, C1-6 alkoxyalkyl, C1-6 carboxyalkyl, sulfonyl, CN, C1-6 haloalkylsulfonyl, or C1-6 acyl group), and (E) a curing catalyst. The lenses are reversibly photochromic and have a high surface hardness, durability and dyeability. (Thus)  $\gamma$ -glycidoxypropyltrimethoxysilane 86 parts was mixed with an iso-PrOH dispersion of colloidal silica (Oscal 1432; 30% solids) 256 and BuOH 520 parts, 0.05M HCl 24 parts added under stirring, and then mixed with glycerol diglycidyl ether (Denacol EX 313), a flow-control agent (L-7604) 0.3, Hg bis(o-cyanophenyl)thiocarbazonate 8, and Mg perchlorate 1.5 parts to give a coating solution Plastic lenses were dipped in the solution and cured

at 70° for 1 h and at 110° for 2 h to obtain 4  $\mu$ m coatings. The coated lenses showed good response to irradiation (shift of maximum absorption and increases of extinction), high resistance to abrasion, good photochromic coating adhesion, heat resistance at 90°, resistance to water (80°), EtOH, and Me2CO, dyeability by disperse dyes, high impact strength, weatherability, and durability.

ST plastic lens photochromic dithizone mercury; hydrolyzed silicon compd photochromic compn

IT Photochromic substances

(containing silica, hydrolyzed silane derivative, epoxy compound and dithizone-mercury compound for coating plastic lenses)

IT Acrylic polymers, uses and miscellaneous

Polycarbonates

RL: USES (Uses)

(lenses, photochromic coating compns. containing hydrolyzed silane derivative,

silica, epoxy compound and dithizone-mercury compound for)

IT Siloxanes and Silicones, uses and miscellaneous

spec. p. 15, 225

RL: USES (Uses)

(photochromic compns. containing dithizone-mercury compound and, for plastic lenses)

IT Lenses

(plastic, photochromic coating compns. containing silica, hydrolyzed silane derivative, epoxy compound and dithizone-mercury compound for)

IT 681-84-5D, hydrolyzed 2530-83-8D, hydrolyzed 7631-86-9, uses and miscellaneous 7790-98-9 10034-81-8 30401-87-7 39317-73-2 99388-21-3D, hydrolyzed

RL: USES (Uses)

(coatings, photochromic, containing dithizone-mercury compound, for plastic lenses)

IT 41407-03-8 61234-16-0 99292-85-0

RL: USES (Uses)

(coatings, photochromic, for plastic lenses)

IT 25656-90-0

RL: USES (Uses)

(lenses, photochromic coating compns. containing hydrolyzed silane derivative, silica, epoxy compound and dithizone-mercury compound for)

**WEST**

Generate Collection

JP 60-107030

L1: Entry 80 of 94

File: DWPI

Jun 12, 1985

DERWENT-ACC-NO: 1985-180153

DERWENT-WEEK: 198530

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TITLE: Photochromic lens - includes coating contg. colloidal silica, silicon cpd.  
deriv. multifunctional epoxy! cpd. dithizon cpd. and catalyst

PATENT-ASSIGNEE:

ASSIGNEE

CODE

SUWA SEIKOSHA KK

SUWA

PRIORITY-DATA: 1983JP-0214907 (November 15, 1983)

PATENT-FAMILY:

PUB-NO

PUB-DATE

LANGUAGE

PAGES

MAIN-IPC

JP 60107030 A

June 12, 1985

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APPLICATION-DATA:

PUB-NO

APPL-DATE

APPL-NO

DESCRIPTOR

JP60107030A

November 15, 1983

1983JP-0214907

INT-CL (IPC): G02B 1/10; G02C 7/10; G03C 1/73

ABSTRACTED-PUB-NO: JP60107030A

BASIC-ABSTRACT:

Lens is coated with compsn. contg. (A) colloidal silica having the grain size of 1-100 microns (B) hydrolysed or partially condensed prod. of one or more sorts of Si compounds of formula (I). (C) Multi-funct ional epoxy compound; (D) dithizone cpd(s) of formula (II) or (III) and (E) hardening catalyst.

In the formulae R1 is an organic group contg. at least one of vinyl, amino, epoxy and phenyl groups. R2 is H or hydrocarbyl. R3 is an alkoxyalkyl or acyl. a+b is up to 2 where a and b are 0, 1 or 2 respectively. R4-R9 and X are each same or all of which have substituents. e.g. F, or carboxy, sulphonyl or cyano gps.

CHOSEN-DRAWING: Dwg.0/0

TITLE-TERMS: PHOTOCHROMIC LENS COATING CONTAIN COLLOID SILICA SILICON COMPOUND  
DERIVATIVE MULTIFUNCTION POLYEPOXIDE COMPOUND DITHIZON COMPOUND CATALYST

DERWENT-CLASS: A89 L01 P81 P83

CPI-CODES: A05-A01E1; A06-A00E1; A08-D01; A08-M01; A08-R06; A12-L02A; L01-G04;  
L01-L05;

UNLINKED-DERWENT-REGISTRY-NUMBERS: 1694U

POLYMER-MULTIPUNCH-CODES-AND-KEY-SERIALS:

Key Serials: 0205 0211 0222 0189 0231 1282 1304 1306 2020 2218 2301 2307 3252 2718  
3310

Multipunch Codes: 014 04- 05- 08- 15- 17- 226 229 231 303 308 310 311 334 341 38-

PAT-NO: JP360107030A  
DOCUMENT-IDENTIFIER: JP 60107030 A  
TITLE: PHOTOCHROMIC PLASTIC LENS  
PUBN-DATE: June 12, 1985

INVENTOR-INFORMATION:

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ASSIGNEE-INFORMATION:

NAME	COUNTRY
SEIKO EPSON CORP	N/A

APPL-NO: JP58214907

APPL-DATE: November 15, 1983

INT-CL (IPC): G03C001/733, G02B001/10 , G02C007/10

US-CL-CURRENT: 359/580

ABSTRACT:

PURPOSE: To provide superior surface hardness to a lens by coating the surface of the lens with a coating composition contg. colloidal silica, a hydrolyzate or a partial condensation product of a silicon compound, a multifunctional epoxy compound, a dithizone mercury compound and a curing catalyst and by curing the composition.

CONSTITUTION: The surface of a lens is coated with a coating composition contg. colloidal silica, a hydrolyzate or a partial condensation product of a silicon compound represented by formula I (where R<SP>1</SP> is vinyl, amino, imino, epoxy, methacryloxy or the like, R<SP>2</SP> is H, hydrocarbon or halogenated hydrocarbon, R<SP>3</SP> is hydrocarbon, alkoxyalkyl or acyl, each of a and b is 0, 1 or 2, and a+b≤2), a multifunctional epoxy compound, a compound represented by formula II (where each of R<SP>4</SP>~R<SP>9</SP> and X is substituted aryl, and the substituent is halogen, hydrocarbon, alkoxyalkyl, carboxyl, carboxyalkyl, sulfonyl or the like) and a curing catalyst, and the composition is cured.

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E. 經化阻異

プラスチックレンズは、箱鏡ガラスレンズに比較した場合、安全性（耐衝撃性）、軽量化、易加工性そしてファッション性（被染色性）などの優れた特長を持ち、それに加えて、ハードコート、防曇処理コートなどの表面処理、高屈折率樹脂の開発がなされ、眼鏡ガラスレンズに匹敵するまでに至っているが、また耐摩耗性に関しては、後述の余地が満ちており、せしもう一つ大きな課題としては、フォトクロミック性能を有するプラス

一方、フォトクロミック材料（レンズ）に関する技術は、特公昭45-13716、特公昭45-28093、特公昭46-1106、特開昭48-89179、特開昭51-45541、特開

(但し R<sup>1</sup> はビニル、アリノ、イミノ、エポキシ、メタクリロキシ、フェニル、チオール及びアルキルチオール基 (R<sup>1</sup>, ~O<sub>2</sub>) から選ばれる少









